Commelina erecta and three related species from Puerto Rico

José A. Mari Mut

On the cover: *Commelina erecta*, photographed by the author.

© 2026 Ediciones Digitales, Aguadilla, Puerto Rico. This work may be freely reproduced for educational, non-profit use.

Commelina erecta and three related species from Puerto Rico

José A. Mari Mut

Professor Emeritus, Department of Biology, University of Puerto Rico, Mayagüez, PR 00680. jamarimutt@me.com

During most of 2018, I made observations on the genus *Commelina* in Aguadilla, Puerto Rico, near the northwest corner of the island. Four flower types were recognized, all referable to *Commelina erecta* in the literature. The observations were published in seven Notes (Mari Mut, 2019), giving the plants scientific names was left pending.

I retook the subject in early October 2025, found again the flower types, repeated previous observations, made new ones, and delved deeper into the literature of the genus. What follows implies that the name *Commelina erecta* is used in Puerto Rico (and possibly elsewhere in the Caribbean) for that species plus at least three others for which new names are proposed. In my view, new species are preferable to reusing synonyms, employing names of poorly described species, or using infraspecific categories that already plague the synonymy of *C. erecta*.

I am aware that the new names will not be considered valid, due in part to how they are being published. Nevertheless, they will hopefully capture the attention of local collectors and botanists, so that more attention is given to these plants. My conclusions may be all correct, all incorrect, or somewhere in between; consider them a hypothesis.

***Commelina erecta* L. 1753**

This species was described using plants descended form specimens collected in Virginia, for this reason it was considered native to North America. Today it's also considered native to Central America, the

Caribbean, South America, and Tropical Africa. Morton (1967) suggested that it originated in Africa because "within this region are to be found many closely allied taxa".

Comellina erecta is considered the most variable species of the genus, as a result its synonymy includes at least five species names, plus subspecies, varieties, and forms. After analyzing its variability, Pellegrini and Forzza (2017) concluded that "The only morphological characters, constant in all areas and environmental conditions were: *the auriculate leaf-sheath margins; terminal to apparently terminal inflorescences (1–3 per stem), broadly sagittate to subcordate spathes with connate margin, aborted upper cincinnus (generally completely absent, but sometimes only vestigial); hyaline, linear and involute medial petal (almost invisible at blind sight); capsules with 1-seeded locules; and smooth seed testa*." In Flora of North America, Robert Faden includes: *Seeds… with soft, whitish tissue at both ends or in a band*.

All the above characters, except the last one, apply to all the flower types that I have studied. The simplest taxonomical solution is to expand the description of *C. erecta* to indicate that the seed tissue may be present or absent, but this negates other differences and casts doubts on seed morphology as a taxonomic character. Joseph and Nampy (2012) were able to separate the 22 species of *Commelina* that grow in southern India by using seed and seed capsule morphology.

The following descriptive notes are based on plants growing in Aguadilla (along the southern fence of the University of Puerto Rico campus) and in Mayagüez (behind the Piñero building, UPR campus). *Flowering stems commonly erect, up to 30 cm tall, taller if supported. Leaf blade lanceolate to ovate-lanceolate, apex acuminate; leaf base with a pair of lightly pubescent auricles, sheath reddish and typically short, with minute white hairs, internode slender and green. Inflorescences 1–2 close together near stem apex, each surrounded by two bracts that form a compact spathe about 15 mm long, connate at the back and containing mucilage. Proximal cincinnus absent or represented by an enclosed stub, very rarely developed and producing a male flower; distal cincinnus with 1–4 (usually 2) flowers that barely project over the spathe. Sepals well-developed, white to translucent. Paired petals large (c. 36 mm across both), vivid blue to indigo, very rarely white. Third petal greatly reduced, gladiate, involute, white to translucent. Staminodes 3, cruciform, superior and inferior lobes*

well-developed, subequal, middle lobes minute. Central anther large, coiled, butterly-like. Filaments of lateral anthers white to very pale blue, anther border blue-purple. Ovary ovoid, pale green with three white stripes, style pale, stigma purplish and capitate. Seed capsule trilobed, lobes one-seeded, ventral lobes dehiscent and smooth, dorsal lobe indehiscent and verrucous, with abundant small warts. Seeds smooth, dark brown to almost black, oblong, averaging 3.6 mm long, with an interrupted band of tissue, embryotega apiculate.[1]

Puerto Rican naturalist Juan A. Rivero collected the species in Mayagüez in 2009 and commented that he first saw it in Puerto Rico about 15 years earlier (~1995). He called it *cohítre azul* (blue dayflower) *and cohítre gigante (giant dayflower)*, described its flower morphology and studied its reproduction (Rivero and Almodóvar, 2009). Like other researchers, he concluded that *C. erecta* produces seeds mainly by self-fertilization. Photographs sent to me by a dozen Facebook friends indicate that the plant is found around the island at low elevations in urban settings. None of the photos were taken in the mountains, and I don't recall seeing the species there. It has several common names, including Widow's Tears, Whitemouth Dayflower, Erect Dayflower, and Slender Dayflower (the latter for the flowering stems).

A closing comment pertinent to what follows is that *C. dielsii* Herter 1940, from Argentina and Uruguay, differs from *C. erecta* by one character: *its petals being yellow* (González and Hassemer (2020). Bacigalupo (1995) considered it a synonym of *C. erecta*.

***Commelina azurea* new species**

Differs from *C. erecta* as follows: *Flowers medium-sized, about 21 mm wide across light blue to very pale blue to rarely white petals. Central staminode sometimes partially or completely transformed into a third petal. Leaf sheath longer. Internodes thicker, usually olive green to maroon. Seeds reniform, without a band of tissue.*

If *Commelina erecta* arrived in Puerto Rico rather recently, *C. azurea* would be the plant reported from the island as *C. virginica* by Urban, as *C.*

[1] From an angle, the seed resembles a box crab with claws held against the body.

elegans by Britton and Wilson (1924), and as *C. erecta* by later authors (e.g., Proctor, in Acevedo-Rodriguez and Strong, 2005[2]). Urban described the petals as *caerulei, rarus albi, et caerulescenti-aflati* (blue, rarely white, and bluish-tinged), while Britton described them as blue or pale bluish-white. The plant grows in urban settings and natural areas, it has been growing naturally in my backyard in Aguadilla for over 35 years.

Etymology. The name refers to the bluish petals.

Commelina blanca **new species**

Differs from *C. azurea* as follows: *flowers consistently white, staminodes with thicker upper lobes that extend laterally*, giving them the appearance of minute body builders or two-tailed kites. They reminded local naturalist Ricardo Valentín of the Pi Symbol.

Rivero and Vives (2013) called these plants *cohítre blanco* (white dayflower) and added: "Although considered a variety of *C. erecta*, it differs from that species in the white color and smaller size of the flower, in the morphology of its staminodes, and in maintaining its identity when growing together with *C. erecta*, which probably justifies it as a different species". A Jamaican video on the medicinal properties of *C. erecta* shows plants with only white flowers, and a photograph taken in the Dominican Republic also shows white flowers, suggesting that this species has a wide distribution in the Caribbean. Puerto Rican naturalist Agustin Stahl painted a white-flowered *Commelina* in the 1880s, proving that the plant has been part of the local flora for well over a century (he did not paint the flowers of *C. erecta*).

Commelina blanca is very closely related to *C. azurea*, and while revising the manuscript it went back and forth more than once between species and variety. The consistently white flowers and the shape of the staminodes in plants from different times and localities inclined the balance toward species.

Etymology. The name means white in Spanish and refers to the petals.

---

[2] Compare the size of the flower relative to the leaves in Fig. 34F with Plate 1, Fig. 3 and Plate 6, Fig. 2 herein.

Comellina chica new species

Differs from *C. erecta* as follows: *Flowering stems decumbent or rising a short distance. Leaf sheath longer. Internodes thicker, usually olive green. Flowers small, about 17 mm wide across petals that seldom overlap. Staminodes small, compact, superior lobes larger. Dorsal lobe of seed capsule with fewer but larger warts. Seeds small (about 2.7 mm long), prominently reniform, brown with pale areas, without tissue band and apparently without apiculum*.

This is the plant that I called type 2a in my Notes on *Commelina*. Its distribution outside northwest Aguadilla is unknown.

Etymology. The name means small in Spanish and refers to the flowers.

Acknowledgments. Benjamin Van Ee shared useful information about taxonomy. Fabiola Areces Berazán forwarded data from the herbarium of the University of Puerto Rico, Río Piedras campus. José Almodóvar again provided access to a microscope for studying seeds. Grissell Rodríguez located several articles not readily available online.

Literature Cited

Acevedo-Rodríguez, P. A. and M. T. Strong. 2005. Monocotyledons and Gymnosperms of Puerto Rico and the Virgin Islands. Contributions from the United States National Herbarium, Vol. 52, 415 pp.

Bacigalupo, N. A. Nuevas combinaciones en Commelinaceae. Hickenia 2: 136.

Britton, N. L. and P. Wilson. 1924. Scientific Survey of Porto Rico and the Virgin Islands, Vol. 5, p. 145.

Flora of North America. FNA Vol. 22. http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=107770

González, A. and G. Hassemer. 2020. Not extinct after all: rediscovery of *Commelina dielsii* (Commelinaceae) after 140 years, and first record of this species from Uruguay. Phytotaxa 438 (3): 199–206.

Joseph, S. M. and S. Nampy. 2012. Capsule and Seed Morphology of *Commelina* L. (Commelinaceae) in Relation to Taxonomy. International Journal of Botany, 8(1): 1-12.

Mari Mut, J. A. 2019. Notes on Commelina. Ediciones Digitales, Aguadilla, Puerto Rico. https://archive.org/details/commelina

Morton, J. K. 1967. The Commelinaceae of West Africa: a biosystenatic survey. Journal of the Linnean Society (Botany). 60: 167-221.

Pellegrini, M. O. de O. and R. C. Forzza. 2017. Synopsis of *Commelina* L. (Commelinaceae) in the state of Rio de Janeiro, reveals a new white-flowered species endemic to Brazil. PhytoKeys 78: 59–81.

Rivero, J. A. and J. R. Almodóvar. 2009. The Flower Organs of *Commelina erecta*. https://archive.org/details/rivero-and-almodovar

Rivero, J. A. and M. A. Vives. 2013. Flores silvestres de Puerto Rico—Wildflowers of Puerto Rico. Ediciones Puerto, San Juan, 389 pp.

Urban, I. 1903-1911. Symbolae Antillanae seu Fundamenta Florae Indiae Occidentalis. Vol. IV, p. 145.

Plate 1. Figs. 1-4. Flowers at the same magnification. 1. *C. erecta*, 2. *C. chica*, 3. *C. azurea*, 4. *C. blanca*. 5. *C. chica*.

5

Plate 2. Figs. 1-4. Spathes at the same magnification. 1. *C. erecta*, 2. *C. chica*, 3. *C. azurea*, 4. *C. blanca*. 5. *C. erecta*, note the green internodes.

5

Plate 3. Seed capsules at the same magnification. 1. *C. erecta*, 2. *C. chica*, 3. *C. azurea*, 4. *C. blanca*. Note the fewer but notably larger warts in the second photo. The color difference is due to maturity of the capsules, which change from green to yellow to brown.

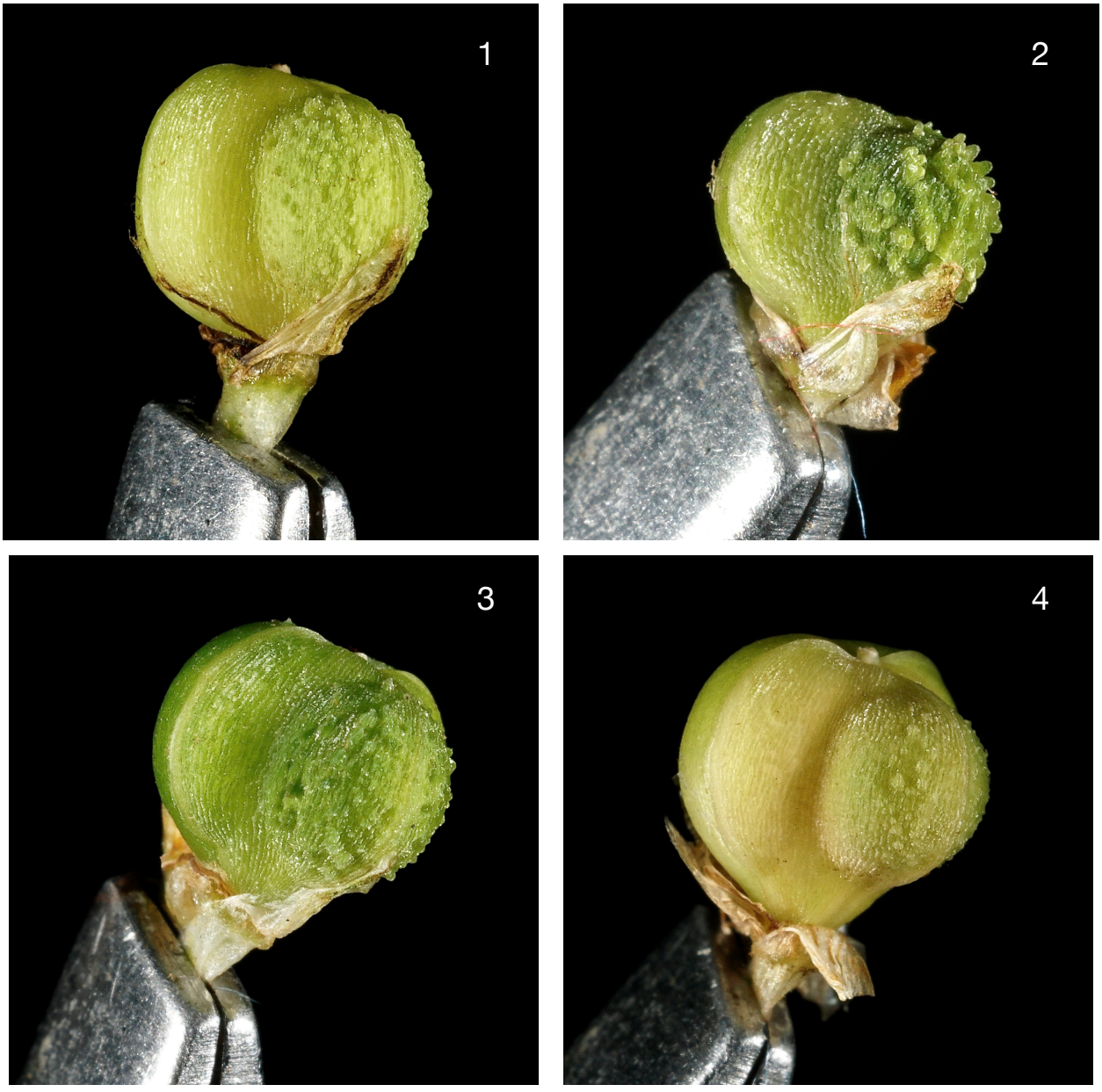
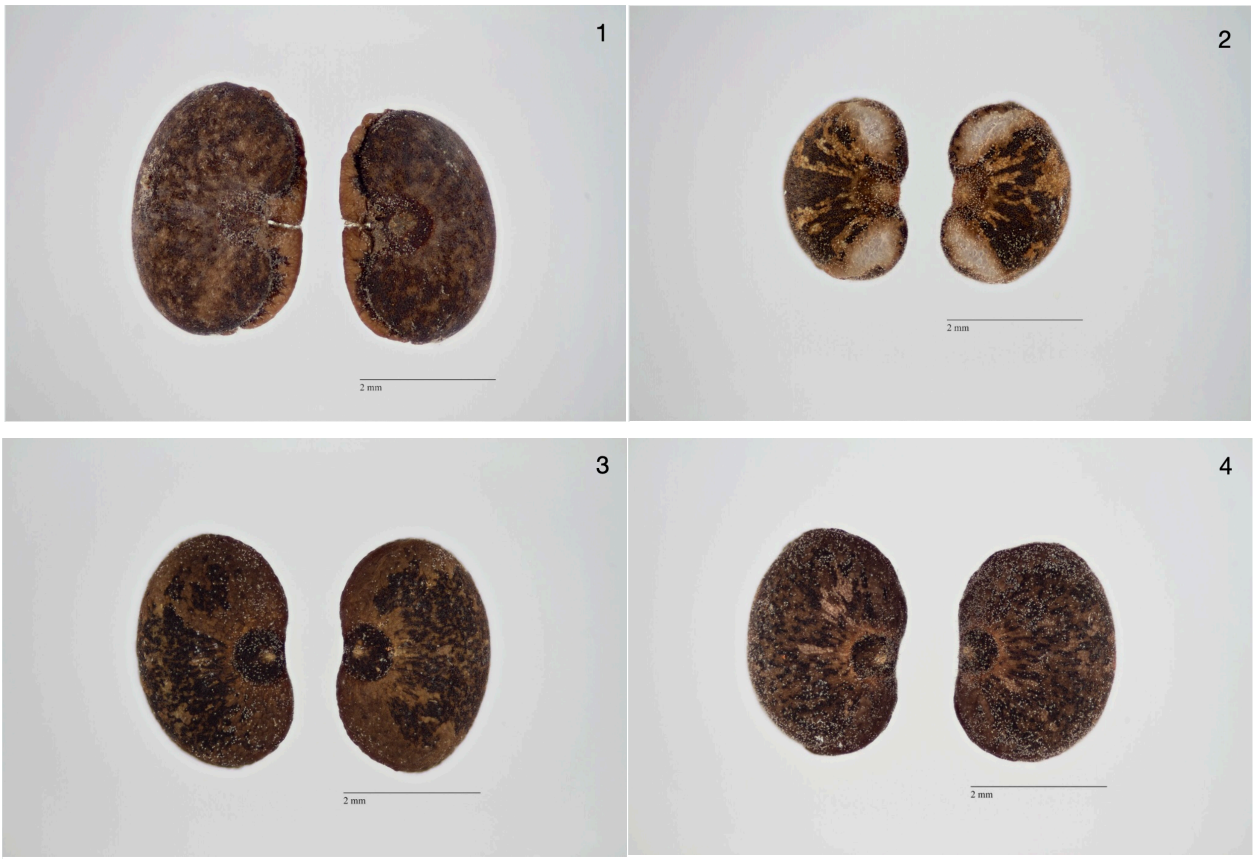
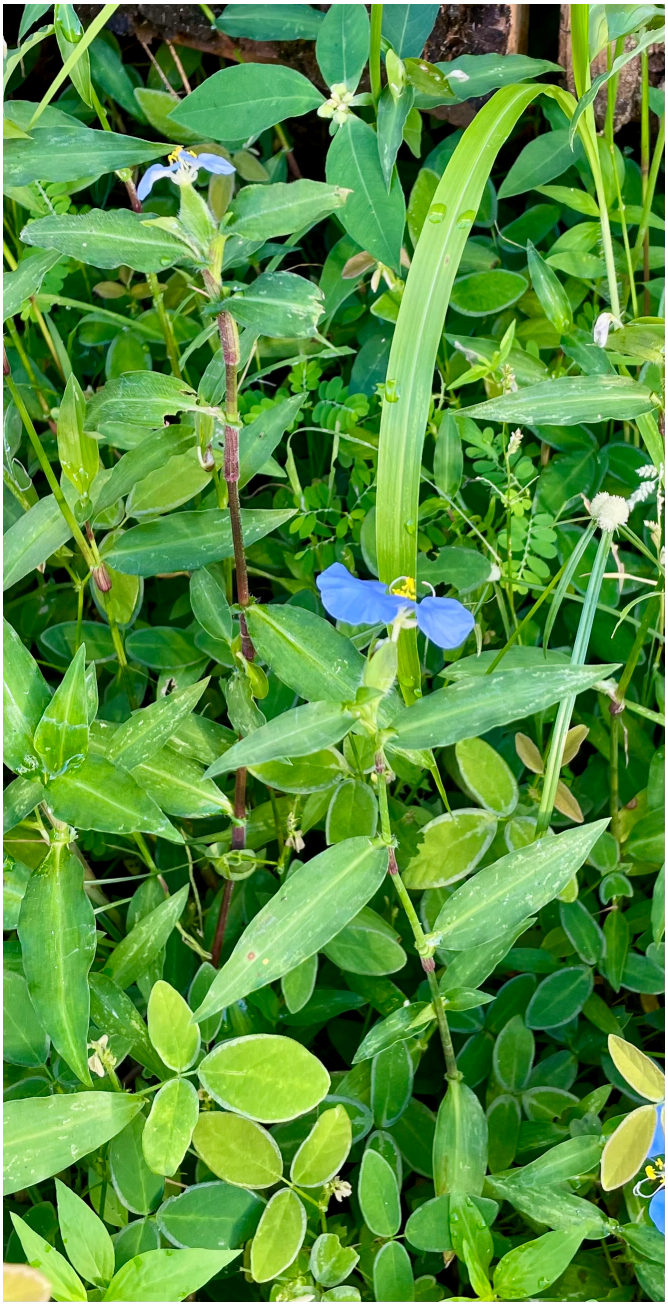


Plate 4. Seeds at the same magnification. 1. *C. erecta,* note the band of tissue interrupted at the middle, 2. *C. chica*, 3. *C. azurea*, 4. *C. blanca*. Figs. 3 and 4 show clearly the apiculum of the embryotega (absent in Fig. 2). The scale bar equals 2 mm. 5. Rare white flower of *C. erecta*, note the regular staminodes and the green internodes of the stem.



5

Plate 5. 1- *C. erecta* (bottom center) and *C. azurea* (above left), note the color and size of the flowers, the color of the internodes, and the length of the sheaths. 2- *C. erecta* with male flower in fully developed proximal cincinnus, a very rare occurrence. Note also the shape of the spathe and compare it with Plate 2, Fig. 1.



1

2

Plate 6. 1. *C. azurea* (first and third) and *C. erecta* (second and fourth). These plants were growing with those in the preceding page. Note again the color and size of the flowers, the color of the internodes, and the length of the sheaths. 2. *C. azurea*.

Plate 7. 1- *Commelina chica* growing on a sidewalk gutter. 2- *C. azurea* with middle staminode partially transformed into a third petal, note the yellowish tissue proper of the staminode. 3. *C. blanca* from the Dominican Republic, photo no longer available on the Internet. 4- *C. blanca* from Jamaica, source: Treat Eye Infections Naturally & more / Commelina erecta (Water Grass) Medicinal Properties & Uses .

2

1

4

3

Plate 8. *C. blanca* painted by Agustín Stahl in the mid to late 1800s; source: https://collections.nmnh.si.edu/search/botany/?q=cn+stahl+watercolor+botanical+art

Plate 9. 1- *C. erecta* at the southern perimeter of the University of Puerto Rico Aguadilla Campus. 2- *C. chica* on a sidewalk near the Ramey airport.

1

2

Plate 10. 1- *C. azurea* trailing over a stump in the author' garden. 2- *C. blanca* growing on a sidewalk near the author's house in Aguadilla. Note the dark internodes in both plants.

1

2

Plate 11. *C. blanca*. 1- Note the enlarged upper antherodes. 2- Central staminode converted into a third petal.

1

2